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(54) Title: SYSTEM AND METHOD FOR DIGITAL MEDIA

(57) Abstract: A system and method for designing custom designed and printed media. The system enables a user to access the system and design, for example, a custom wall covering. The system may present the user with a variety of product options from which the user may select. Based on the product options selected, the user may be presented with various custom criteria. The custom criteria may enable the user to customize various characteristics of the wall covering such as size, color pattern or other. The user may select one or more of the custom criteria. Additionally, the user may be provided with an option to insert text or images not provided in the custom criteria. The images may be stored at a user's or other location. A digital sample image may be generated based on the product options and custom criteria input by the user. The sample image may be presented to the user on a display device. The user may modify the sample image, request that the sample image be printed or downloaded or other function. If the user desires to obtain a wall covering that includes the customization, the user may order a predetermined amount of the wall covering. The system may request payment information from the user for an order that the user desires to place. After receiving the payment information, the system may process and print the order. The order may also be delivered to the user.

SYSTEM AND METHOD FOR DIGITAL MEDIA

FIELD OF THE INVENTION

The invention relates to a system and method for printing or converting a wide variety of printable media. As one example, the invention relates to a system and method for digitally designing and printing a custom wall covering. Embodiments of the system may be configured to design and print a variety of other printable media. This application is a continuation-in-part of Patent Cooperation Treaty Application PCT/US02/11514, entitled METHOD & SYSTEM FOR DIGITAL WALL COVERING DESIGN, which this application incorporates by reference. This application relates to U.S. Provisional Patent Application No. 60/282750, filed April 10, 2001, which this application incorporates by reference.

BACKGROUND OF THE INVENTION

Considering the background to one of many specific implementations of the invention, wallpaper is widely used in homes and offices for decoration purposes. Wallpaper comes in a great variety of patterns and colors, and there are many thousands of different wallpaper designs from which to choose. Wallpaper is typically printed at a factory, and then delivered to distributors, who keep different wallpaper designs and materials in stock.

A drawback with the traditional manner of manufacturing and selling wallpaper is that the distributor must often maintain a significant inventory of wallpaper to satisfy the diverse needs of consumers. Storing the inventory can be expensive and can require significant storage space. The distributor may not sell its entire stock of a particular design before the tastes of consumers change and the design becomes obsolete.

When a distributor does not have a particular design in stock, the consumer may order wallpaper from a catalog. The typical wallpaper catalog is very large and includes a vast listing of different wall paper designs that are available. However, the process of sorting through a catalog of several thousand different designs is time-consuming and often exhausting.

Similar difficulties arise with other printed media such as, for example, posters, greeting cards, garments, banners, decorative foils and others.

SUMMARY OF THE INVENTION

One specific implementation of the invention relates to a system and method for designing custom wall coverings. A user may access the system to design a custom wall covering. The user may be presented with a plurality of wall covering options. The user may select one or more of the wall covering options. Based on the wall covering option selected, the user may be presented with custom criteria specific to the wall covering option selected. The user may use the custom criteria to customize, for example, a color, size, pattern, material, etc. used for the wall covering option. Additionally, the system may be configured for the user to optionally insert text or images that may be used to customize the wall covering option.

Once the user has designed a sample of the wall covering, the system may generate and present the user with a digital sample image of the wall covering product option based on the customization performed by the user. If the user changes the customization, the system may generate and present to the user revised sample images. The user may also be provided with an option to print or download a sample image. The sample image may be printed at a local or remote printer or may be downloaded to a local or remote storage device.

The user may submit an order request for the customized wall covering option. Upon receiving an order request, the system may transmit a request for payment information to the user. The user may input the payment information using any known input mechanism. Using the payment information input by the user, the system may process the order request. The order request may be transmitted to a converter that schedules production of the order and prints the order or arranges for the order to be printed. After printing, the order may be delivered to the user using any known carrier service. Alternatively, the order may be made available for pick-up by the user at a distribution center or other location.

While this Summary has described one specific implementation, the system for designing and printing wall coverings is only one example. The system may be adapted for designing and printing any printable substrate or object such as, by example only, posters, greeting cards, garments, banners, decorative foils, stickers, image transfer media, labels, specialty labels such as labels that incorporate

microelectronics (or "smart labels), media having an image-receptive and transferable ceramic top coat, borders for walls, durable labels for beverage and other bottles and containers, and any other media that can be printed with a personal or commercial printer.

Specific embodiments of the system may be adapted to permit the user to design and print only one specific type of printable media. Other embodiments of the system, however, allow the user to select from among a variety of different printed end products and, in fact, the specific end product or media that is to be printed is a variable that the user specifies during the design process.

BRIEF DESCRIPTION OF THE DRAWING

Fig. 1 is an overview of one embodiment of a method of digital media production;

Fig. 2 illustrates a method for designing custom wall coverings according to one embodiment of the invention.

Fig. 3 illustrates a system for designing custom wall coverings according to one embodiment of the invention.

Fig. 4 illustrates an example of a client-server network in which the user designs wallpaper or another product on a client that is connected to a server, and prints the wallpaper or other product on a local printer.

Fig. 5 is a front view of a large-size sheet assembly according to one specific embodiment of a wallcovering.

Fig. 6 is a rear view of the large-size sheet assembly of Fig. 5.

Fig. 7 is a rear view of an alternative embodiment of a repositionable wallcovering.

Figs. 8 is a cross-sectional view taken about Section 8-8 of Fig. 7.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

Considering one embodiment of a process by which customized media is designed and manufactured, the process includes several steps. In one step, a customer designs and orders a product, which may be wallpaper or other media. In another step, the product is printed, typically by a commercial printer or "converter." In

another step, the product is delivered to the consumer. The system may also include customer service and support functions to assist the consumer with the process.

In the ordering step, the customer typically visits a web site to gather information about products, enter information about the desired end-product, perform customized design functions and ultimately specify a product order. The web site may generate a sample image of the product, or of a design to be printed on a product, such that the customer may preview the final product. The system may also provide the customer with an option to print a sample of the design on a local printer, for example, such as a laser or ink jet printer. The customer may also enter payment information into the system at this ordering step, such as a credit card number or other information to facilitate payment.

As part of the ordering step, the user may input certain information to identify characteristics of the desired end product. For example, the system may provide the user with a menu from which to choose a particular product template. Various product numbers corresponding to particular printable products may be provided in a list. Each product number in the list corresponds to a template that may define such characteristics as the dimensions of the product, shape and/or layout of the product, the location of printable areas on the product, and so on. For example, if a user selects "Avery 1234" from the menu, the system may retrieve default information about the "Avery 1234" product from memory or a database. In one embodiment, a graphical representation simulating the appearance of the "Avery 1234" product appears on a display so that the user may see it.

The system may also provide the user with a menu that lists various product types from which to choose. By way of example and not limitation, the product type menu may permit the user to choose from product types such as "Wall Covering, " "Wall Border Trim," "Floor Tile," "Ceramic Tile," "Fabric," "Curtains," "Pillow Covers," "Table Cloths," "Posters," "Banners," "Exterior House Covering," "Carpets" and whatever other products the system is set up to provide.

The customer may also be provided with a menu of special visual effects. The customer may choose, for example, from between "Holographic," "Lenticular," "Luminescent," "Fluorescent," and "Thermochromic" effects, among others. Another menu may provide choices of different adhesives, such as "Permanent Adhesive," "Initially Slidable, Gradually Permanent Adhesives," "Temporary, Removable Adhesive," and various other types of adhesives known in the art.

Another menu may provide the user with the option of selecting a special surface, such as a surface on which the customer may draw, a gel-ink receptive surface, a writing-resistant (or "antigraffiti") surface, or various other surfaces. Another menu may provide a choice between different materials that are to be printed. This menu may be tied to the type of product that the user has selected. For example, if the user has selected "Wall Covering" from a previous menu, the material selection menu may list only materials that are available for a "Wall Covering," such as "Paper," "Coated Plastic," "Fabric" or any other material in which the product that the customer has selected is available.

Numerous other menus may be provided to the customer to assist the customer in defining the product that he or she wishes design and order through the system.

After the customer has defined the product to be ordered, the order is transmitted to a converter, where a production run is scheduled and the product is manufactured. The order may be transmitted to the converter via e-mail to an e-mail address or via FTP (File Transfer Protocol) to an FTP address, or by other means known in the art. The user may specify the e-mail or FTP address to which the file should be sent, or the e-mail or FTP address may be stored in a directory on the server, such as in a directory of commercial printing facilities. The order may also be provided to the converter by way of an order database, which the converter may periodically check, or may appear as an entry in a job queue that the converter may view on the web site. There are thus numerous ways that the order may be provided to the converter.

Once the product has been printed, a delivery partner then delivers the product to the customer. The delivery partner may be a courier service, a postal service or other traditional delivery service. Alternatively, the customer may pick up the product from the converter or from a distribution center.

Figure 1 is a block diagram illustrating one embodiment of a system for providing custom digital media products. The system provides a process for purchasing digital media 100. The system orients the customer to the particular media to be produced (block 102), such as by providing product information, product layout, and/or other information to assist the customer in selecting a particular media to be printed. The system then provides the customer with the capacity to configure the product (block 104) by, for example, customizing and/or personalizing the product.

The system allows the user to order the product (block 106), and bills the client and accepts payment (block 108).

In this particular embodiment, a converter provides the capacity to manufacture the product with the steps 110. The converter, for example, schedules the manufacture of the product (block 112), and carries out the printing, post-processing, and any other necessary production steps (block 114). The system provides for delivery of the product to the customer (block 116), as well as customer support after delivery (block 118). The system may also provide ongoing customer support throughout the process such as, for example, permitting the customer or a third party to track the status of the order (block 120), providing the customer with information about the products, providing individualized advice pertaining to use and selection of the product, and/or other customer support functions.

Considering now another specific embodiment, Fig. 2 is a schematic block diagram of a method for designing custom wall coverings according to one embodiment of the invention. A user may be provided with access to a system that enables designing custom wall coverings, step 200. The system may present the user with one or more product options relating to wall coverings, step 202. The system may present the product options on, for example, a monitor, television, personal digital assistant, web-enabled mobile phone or other display device. Although the invention is described in terms of wall coverings, it should be understood that the invention may be applied to a variety of other products such as, for example, tiles, curtains, wall borders, mailboxes, house coverings, etc.

Based on the options presented, the user may select one or more products to be customized. The products selected by the user may then be received by the system, step 204. The user may then be presented with custom criteria relating to the products selected, step 206. The custom criteria may be, for example, materials to be used for the products, pre-stored designs, product size, colors, etc. The user may select one or more of the custom criteria to design a custom wall covering. The custom criteria selected may be received by the system in step 208. The system may then generate and present a sample digital image of the product based on the custom criteria selected by the user, step 210.

The user may desire to, for example, download or print the sample image. The user may download the sample image to, for example, a local hard drive of a personal computer or print the sample image on, for example, a local laser-jet or ink-jet printer.

The system may determine whether the user has requested to download or print the sample image in step 212. If the user requests to download or print the sample image, the sample image request may be transmitted to an appropriate device in step 214. If the system determines that the user has not requested the sample image in step 212, the system may determine whether the user has requested that any modifications be made to the product, step 216. If the user has requested any modifications to the sample image, the system may apply the modifications to the sample image and present a revised sample image to the user, step 210.

The system may then monitor whether the user transmits an order request. If the user transmits an order request, the order request may be received in step 218. The system may then request payment information from the user, step 220. The user may input the payment information requested. The payment information may be received in step 222. The order may then be processed, step 224. The order may be transmitted to, for example, a converter, step 226. The converter may schedule production for the order, step 228. The converter may also print the order, step 230. After an order is completed, the order may be delivered to the user, step 232, using any known delivery mechanism such as, for example, a courier service, postal service, or other delivery service. Alternatively, the order may be made available for pick-up by the user.

Fig. 3 is a schematic block diagram of a system 300 for designing custom wall coverings. The system 300 may include a system access module 302 that enables a user to access the system 300. The system access module 302 may be, for example, a web page that enables the user to input information regarding a wall covering. A product option presenting module 304 may be used to present the user with a plurality of wall covering product options. The wall covering product options may be, for example, wallpaper, wall borders, etc. The user may select one or more of the wall covering product options using, for example, a standard computer mouse or keyboard, voice recognition software, touch-screen, etc. The product options selected may be received by system 300 using a product selection receiving module 306.

The system 300 may then present the user with custom criteria pertaining to the product options selected using custom criteria presenting module 308. The custom criteria may be customizations specific to the production options selected. For example, if the user selected a floor tile product option, the custom criteria may include materials for the floor tile of vinyl or ceramic. Additional custom criteria may

include product size, color, design, etc. If the user inputs one or more custom criteria, the custom criteria may be received using a custom criteria receiving module 310. Based on the product options and custom criteria selected, the system 300 may generate a sample image, preferably in digital format, and present the sample image to the user using sample image presenting module 312. The user may request that the sample image be, for example, downloaded to a different location or printed on a printer. A sample image request determining module 314 determines whether the user has requested that the sample image be downloaded or printed. If the sample image request determining module 314 determines that the user has requested that the sample image be downloaded or printed, a sample image transmitting module 316 may be used to transmit the sample image to an appropriate device.

A modification determining module 318 may be used to determine whether the user has requested any modifications to the sample image. If the user has made one or more modifications to the sample image, a revised sample image that includes the modifications may be generated and presented to the user using the sample image presenting module 312. Alternatively, the user may request that an order be placed for the product options and custom criteria selected. The order may include, for example, an amount of the product needed, due date, etc. If the user has requested to place an order for the product options, an order request determining module 320 may be used to determine that the user has requested to place an order. After determining that the user has requested to place an order, the system 300 may request payment information from the user using a payment information requesting module 322. The payment information requesting module 322 may request, for example, a user's name, telephone number, mailing address, credit card information or other information. Payment information input by the user may be received by a payment information receiving module 324.

After receiving the payment information, an order processing module 326 may be used to process the order received from the user. The order processing module 326 may, for example, assign an order number to the order. The order may then be transmitted to, for example, a converter that completes the order. The converter may use a production scheduling module 330 that schedules the production of the order. An order printing module 332 may be used to print the order based on the product options and custom criteria selected by the user. If the user has requested that the order be shipped, an order delivering module 334 may be used to direct the shipping

of the order. The order delivering module 334 may arrange for the order to be shipped via a courier service, postal service, overnight service or other carrier service. Alternatively, the user may request that the order be picked-up at, for example, a distribution center or other location.

Customer service may be provided throughout the process to assist the customer. The customer service may provide support in conjunction with such functions as designing and ordering the product, tracking the order, monitoring the consumer's order and account history, and various other functions. Details concerning the foregoing steps are discussed with reference to Fig. 2 above.

In one embodiment of a system to implement the process, an infrastructure is provided having a web site, a design tool, an image database, an order database and a customer database. A module to facilitate and coordinate collaboration between partners in the process may also be provided. Each of the foregoing is now discussed in turn.

The web site serves a variety of roles. The web site provides a means of sharing information among the various participants in the process, and serves as the front-end to consumer and order databases. The site may provide the customer with design advice, tips, and information about styles, and may showcase various designs and sample end-products. The web site may also allow the customer to select from a variety of different designs or images to be printed onto the end-product. The site may also provide interactive forms, drop-down menus, and various design tools that permit the user to enter specific information about the desired end-product. Other functions that the web site may serve with respect to the customer may be customer registration, image selection, design and order specification, tracking and tracing of orders, review of order history, reuse of past order for new orders, standard design sample request, order sample request, filing of images and designs, and others.

The converter discussed above may be used to check an order queue for new orders, obtain graphical and order information, maintain/update order status, review order history, and other functions. The system may be used to review management information, for example, financial reports, evaluate converter performance, customer response, complaints and questions, determine customer characteristics and customer value, targeted marketing, etc.

The web site may provide the customer with a design tool that permits the user to select, create or import images or designs to be printed on the final product. The

design tool may, for example, permit the customer to review a selection of different images. To facilitate a search through a large number of designs and/or images, the site may provide a listing of different categories of designs. The user may specify a particular design category, and possibly a design subcategory to further narrow the type of design for which she or he is looking. The user is then presented with different images from within the category and/or optional subcategory that are displayed on a display device and from which a user may choose. The tool may permit the customer to directly search a database of images by, for example, inputting information about a desired design.

As an alternative to presenting the customer with different pre-made designs from which to choose, the web site may permit the customer to import an image from an external source. For instance, the user may upload an image and/or text, in the form of a graphic file, a page description file or other importable format, to the site to be incorporated into the design. As a further alternative, the web site may provide graphic design tools to permit the customer to create a new design on the web site.

The web site may incorporate a design wizard that presents the customer with a step-by-step process to select, upload or design a design or image. The wizard may provide the user with information and advice throughout the design process. The wizard may also serve a screening function by checking the design for conformity to certain criteria. The wizard may, for example, enable a user to define a surface dimensions and details, select an image, and scale, crop or otherwise manipulate the image. The images may be stored in an image database that stores the images in multiple formats, for example, jpeg, bitmap, TIFF, presents the images in a structured manner based on, for example, category, enables users to browse and select among the images, presents pricing information, enables users to add personal images, is controlled by a database administrator that may have authority to modify any database function.

The system may also include an order database that stores basic information for each order. The information may be, for example, order identifier, customer identifier, date and time of order, order calculation, for example, different price elements and total, design information, and any other type of information. The order database may also include workflow information that identifies a converter that the order has been assigned to, order status, distributor, distributor trace number, estimated delivery time, and any other desired information.

A customer database may also be used that includes basic customer information such as customer identifier, name, invoice address, shipping address, telephone number, facsimile number, electronic mail address, company information, types of products ordered, frequency of orders, etc. The database may also include a customer's complaint or questions history, responses to mailings, special offers, etc., other contacts, and any other desired information.

The web site in this embodiment plays a different role with respect to the manufacturer that receives the order from the customer. The site may permit the manufacturer to check an order queue for new orders. It may also provide graphs and other information about orders, provide order histories and keep track of order status.

An order database may be provided to store basic information about the order, such as an order ID, a customer ID, date and time of the order, an order price calculation, and information concerning the design. The order database may also include workflow information, such as information about the manufacturer to whom the order has been assigned, the status of the order, information concerning the distributor that will deliver the order, a distributor tracing number, a link to the order tracking system of the distributor, and estimated date of delivery, and other information.

A customer database may also be provided that may contain different types of information, such as name and address information and other information necessary for processing and delivering an order. The customer database may also include additional information concerning customers in order to permit the management organization to profile customers and to perform marketing analyses. The customer database may include customer-specific complaint histories, questions histories, customer responses to mailings and offers, related contacts, and information relative to notifications and other information that has been sent to the customer.

Considering now one specific example of a system for designing and printing substrates and, without reference to a single specific end product or application, Fig. 4 illustrates a client-server model in which a client computer 400 connects to a server computer 412. The client computer 400 is connected to the server 412 via a LAN (local area network), a phone line, or a TCP/IP based WAN (wide area network) on the internet. A client/server network set-up enables many clients to access the same applications and files that are stored on the server 412. The client 400 may be connected a personal computer, which has various peripheral devices such as a

keyboard 414, a monitor 416, a mouse 418, and a floppy disk drive 420. The client 400 is also typically connected to a local printer 422, which may be an ink jet printer, a laser printer, any of a variety of different digital printers, a commercial printer and various other types of printers that may be connected to a client.

The client 400 need not be a personal desk top computer as shown in Fig. 4, but may instead be a Personal Digital Assistant (PDA), an advanced wireless phone, or other device capable of connecting to a server 412. Whatever specific form the client may take, a common characteristic is that the client has a browser, which allows the user to read hypertext and act as the client to the server 412. Specific non-limiting examples of suitable browsers include Microsoft's® Internet Explorer and Netscape® Navigator. The browser may be embedded into a consumer electronic device, such as a telephone, a PDA, electronics in an automobile that interact with a network via a wireless modem or other wireless device, or any of a wide variety of devices that can communicate with another device across a network.

Servers such as server 412 are well known in the art. They are typically powerful PC's or other types of powerful computers that are programmed with application software for processing information received from one or more clients. Server 412 typically has memory in which web pages and other information is stored. Many of these web pages are often interactive forms that are transmitted to the client. The user views the form on the client and enters information onto the form. The browser then transmits the user-entered information to the server.

The server 412 may be programmed with a database and with software for interfacing with the database. Information about particular wallpaper designs, such as graphic representations of wallpaper patterns, descriptive text, and various other information may be stored in the database. Databases and programs for interfacing with databases are known in the art. Alternatively, the desired information about particular designs may be stored in memory on the server.

The user may input the information into the interactive form using the mouse 418, the keyboard 414, with voice commands, or various other means for inputting information into an interactive form that are known in the art. The server 412 is typically programmed with software, such as a Java servlet or other computer program, to process the information that the server receives from the client.

It should be noted that, while one embodiment of the system calls for wide-format printers to print wide-format media such as sheets of wallpaper, the system

more generally may be used to print a host of other media besides sheets of wallpaper. Consequently, in situations in which the end product is not wide-format media, the printer need not be a wide-format printer. The printer may also be a printing press or other commercial printing equipment.

In the embodiment of Fig. 4, print jobs from the server 412 may be printed at a wide-format printer 424. Wide-format printers, such as wide-format ink jet printers, are known in the art and are available commercially from Hewlett-Packard Corporation of Palo Alto, California and several other printer manufacturers. There are a variety of other types of printers that can be used, including various commercial printers. The wide-format printer 424 of Fig. 4 need not be directly connected to the server 412. Instead, the printer may be housed at a commercial printing facility, for example, that is remote to the server 412. The server may be in communication with another server or a client at the commercial printing facility, which in turn controls the wide-format printer 424.

Examples of Specific Wall-Mountable Media

As discussed previously, one application of the system is to design and print wall-mountable constructions, such as wall paper, posters, temporarily-mounted large-sized notes, and other media that are ultimately mounted on a wall or other substrate. The wall-mountable constructions may come in a wide variety of different formats. It is expected that customers will often choose a wallpaper media that is pre-coated with an adhesive backing, so that the customer will not need to use wall paper paste, although wallpaper media without a self-adhesive backing may also be used.

One class of media relates to large-sized, repositionable sheets that can be printed in a wide-format printer. The sheet may have other special features. One example is wallpaper stock that resists the accumulation of bubbles when the stock is applied to a wall or other substrate, and/or which can allow the wallpaper to be repositioned once it is applied. A facestock having a front surface and a back surface, and a layer of adhesive having an upper surface and a lower surface and end edges is provided. The upper surface of the adhesive is adhered to the back surface of the facestock. A release liner having a release surface is also provided, such that the release surface is in contact with the lower surface of the adhesive. A pattern of non-adhesive material forms may be embedded into the upper surface of the adhesive layer. Each of the non-adhesive material forms has a top surface, and the top

surfaces of the non-adhesive material forms are below the plane of the upper surface of the adhesive layer. In an alternative embodiment, the pattern of non-adhesive material forms are embedded into the release surface of the release liner rather than into the adhesive. One example of media is described in U.S. Patent No. 5,866,220, titled "Method for Making Repositionable Wall Covering and Intermediate for Same."

Another class of media relates to large-sized sheets that can be temporarily adhered to a substrate and later removed. This type of sheet is particularly advantageous for temporary advertising, party banners, and numerous other applications in which it is desirable to adhere the printed media only temporarily to the substrate. Specific examples of wallpaper media are described in U.S. Patent Nos. 6,124,953 ("Wallpaper Construction Having a Holographic Border"), 5,056,880 ("Holographic Wallpaper"), 3,663,269 ("Self-releasable Nonmoisture Activated Wall Covering").

The system may utilize specialized printing systems when appropriate. For example, specific systems for printing wallpaper are known and are described in, for example, U.S. Pat. Nos. 5,187,501 ("Printing System") and 5,124,730 ("Printing System"). Other printing systems may be used to print specific types of media, and a wide variety of different printing systems may be employed.

As discussed previously, the present invention is not limited to a particular media onto which designs are to be printed. The specific media may encompass a broad range, including wallpaper and many other media as previously described.

Referring to one example embodiment of a media that may used in a method for designing and printing custom media, Figs. 5-8 illustrate one embodiment of a specific large-sized sheet that includes a paper facestock sheet 510. The sheet has a printable side 512 that includes an inkjet ink receptive coating 514 to receive and retain ink from an inkjet printer. In other embodiments, coatings other than inkjet ink receptive coatings can be used, to adapt the sheet to receive printing from other types of printers, such as laser printers, thermal printers, and various other printers known in the art.

The facestock sheet 510 also has an adhesive-bearing side 516, which includes a layer of primer 518. A suitable facestock having an inkjet ink receptive coating and a primer can be obtained commercially. One example of a suitable facestock sheet is 80# Presentation Matte, which is available from P.H. Glatfelter Inc.

of York, Pennsylvania, although other papers can be used. The 80# Presentation Matte paper comes pre-coated with an inkjet ink receptive coating and a primer.

One suitable primer is described as follows.

Component	Weight (lbs.)
Water	682.6
PVA	30.0
Defoamer	1.0
Silicate	70.0
Biocide	1.0
Total Weight	784.6

One suitable primer is described as follows. The following are examples of suitable commercial products that may be used in forming the primer embodiment described above. One suitable PolyVinyl Alcohol (PVA) is available commercially as Elvanol 71-30 from E.I. du Pont de Nemours and Company. A suitable defoamer is available as Drewplus L-139 from Drew Industrial Division of Ashland Specialty Chemical Company. One suitable silicate is available as Zeolex 7 from Huber Chemicals Corporation. One suitable biocide is available commercially as Tektamer 38.

One embodiment of a suitable primer is prepared as follows. The water is added to a mixing vessel at a temperature of 24°C (75°F) or below. An agitator is then started. The defoamer is added to the vessel and mixed. The PVA is added into the vortex so that it is rapidly wet out and dispersed. The slurry is stirred for approximately 10 minutes. The temperature of the mix is raised to 90°C (194°F), and the mix continues to be stirred until the PVA is dissolved.

Once the PVA is dissolved, the PVA solution is cooled. The silicate is added to the vortex so that it is rapidly wet out and dispersed. The mixture is agitated for approximately 15 minutes. The biocide is added and is mixed for 5 minutes.

This particular embodiment of a primer may have a percentage of solids of 12% - 14%, and a viscosity of 60 cps (LVT, #3 @ 12 rpm). It should be understood that the foregoing is merely an example of a suitable primer, and that other primers may be used.

A wide variety of facestocks may be used in addition to paper-based facestock. Plastic facestocks may be used, with or without a print-receptive top coating. Various

types of films may be used for the facestock, including transparent, translucent, and opaque films. The films may be cast or extruded. Cardstocks, fabrics and foils may also be used. A particularly desirable facestock is vinyl, such as cast or calendared vinyl films, which are available commercially from many different vendors. Indeed, a plethora of different facestocks are in use in the label art, for instance, and those skilled in the art of the present invention will recognize that a great many potential types of facestock may be used in the present invention.

A continuous film of adhesive 520 covers the entire adhesive-bearing side 516 of the facestock. The adhesive film 520 includes ultra-removable ("UR") microspheres, which are known in the adhesive art to be a component of typical repositionable adhesives. In particular, the adhesive is a suspension polymer microsphere removable adhesive. Suitable adhesives are described in US Patent No. 5,656,705, which Avery Dennison Corporation owns. Other suitable adhesives are available commercially. For example, one suitable water-based microsphere adhesive is sold by National Starch and Chemical Company under the tradename Micro-Lok. The adhesive film 520 may have a coat weight of less than 20 gsm (grams of coating per square meter), and preferably between about 10-18 gsm. In one specific example, an adhesive coat weight of 17 gsm was found to perform well on a variety of surfaces. The adhesive film is applied so that it has a peel adhesion that is typically between 1.2 and 2.6 Newtons/inch, or at least less than about 3.0 Newtons/inch. The preferred range of primer coat weight is 0.5 to 3 gsm, with the most preferred primer coat weight being 1 to 1.5 gsm. The preferable range of coat weights of the adhesive and the primer may vary depending on the facestock that is used in a particular embodiment.

It should be noted that suitable microsphere-based adhesives may be applied directly to the facestock, without a primer. Alternatively, priming may be used to improve anchorage to the facestock and to minimize transfer of microspheres to the facestock. Additional primers that may be used are disclosed in US Patent No. 5,656,705, which Avery Dennison Corporation owns. Techniques for applying an adhesive to a facestock are well known in the art. One approach is to coat the adhesive on the release liner. The adhesive then transfers to the primed facestock when the facestock is brought into contact with the release liner. Another approach is to coat the adhesive directly onto the facestock.

As another alternative, the adhesive may be applied in more than one layer. For example, U.S. Patent Nos. 5,993,961, 5,925,432, 5,827,609 and 5,558,913, which are incorporated by reference, all describe multi-layer adhesive arrangements. In the arrangement of U.S. Patent No. 5,993,961, a first layer of adhesive is applied to the facestock, and a second layer of adhesive is applied to the first layer. The purpose of the first layer is to act as a "barrier" that prevents oils, resins, tackifiers or plasticizers from migrating from the second layer to the facestock.

Various other multi-layered adhesive structures can be imagined. For example, U.S. Patent No. 5,827,609, issued to Ercillo, et. al., discloses a multi-layered adhesive construction having layers of adhesive with different glass transition temperatures. The multi-layered construction shows good adhesion to a wide variety of substrates, and typically converts well. U.S. Patent No. 5,558,913, issued to Sasaki, et. al., discloses a multi-layered adhesive construction in which a permanent pressure sensitive adhesive is applied to the facestock, and a removable pressure sensitive adhesive is applied to the permanent pressure sensitive adhesive.

Methods for applying multiple layers of adhesive are described in U.S. Patent Nos. 5,728,430, 5,925,432, and 5,962,075. The multiple layers may be applied to the facestock simultaneously using methods known in the art.

Considering further this example embodiment of one of many possible media types, a release liner 522 covers substantially all of the adhesive film. The release liner includes a silicone coating. In a presently preferred embodiment, the release liner is a 40# layflat liner that is 2.8 mils thick. Other suitable release liners include silicone coated films or polycoated kraft, as are known in the art. Suitable pre-siliconized release liners are available commercially. The release liner may be pre-printed with indicia and/or graphics, such as the name and logo of the manufacturer.

The release liner 522 may be scored as, for example, by mechanical means, laser means, or other means known in the art. Suitable methods of scoring the release liner are disclosed in US Patent Nos. 4,537,809 and 4,356,375, which Avery Dennison Corporation owns. The release liner is scored so that the end-user can remove the release liner in individual sections. This allows the end-user to mount the printed large-size sheet in a section-by-section fashion, which is particularly convenient for mounting large-size sheets. In one embodiment of the invention that Fig. 6 illustrates, the score lines 524 extend vertically down the release liner. The score lines are spaced approximately 1 inch apart, so that the end-user may remove

the release liner in one-inch strips and mount the large-sized sheet in one-inch segments. Numerous other scoring patterns are suitable, such as the diagonal pattern that Fig. 7 illustrates, in which score lines 524' extend diagonally along the back of the release liner. Fig. 7 illustrates one section of the release liner 526 partially removed, such that a portion of the adhesive layer 520 is exposed.

It should be noted that the specific type of media that Figs. 5 – 8 illustrate encompasses embodiments in which the liner is not scored, but is provided as a continuous sheet. Furthermore, as alternatives to scoring, the liner may be cut, slit, perforated, or otherwise provided with lines of weakness along which segments of the liner may be removed.

The release liner and/or facestock may be remoisturized to prevent channeling during use. "Channeling" refers to a tendency of a sheet to wrinkle when it absorbs water from the atmosphere. A sheet will absorb less water from the atmosphere if the sheet is "remoisturized" to increase the level of moisture in the sheet. To remoisturize the liner and/or facestock, the assembly can be subjected to a steam treatment or another method known in the art. The presently preferred final moisture content of the facestock is between about 3.5% to 5.5% moisture by weight. The presently preferred final moisture content of the release liner is between about 4.5% to 7.0% moisture by weight. When non-paper facestocks and/or release liners are used, such as cast or calendared vinyl for the facestock, the moisture content of the facestock is less of an issue.

An end-user may print and mount the sheet according to the following method. The end-user employs design software to create a desired layout consisting of graphics and/or text. The software controls a wide-format printer, such as a large-format inkjet printer. At the command of the user, the software causes the wide-format printer to print the graphics and/or text onto the printable surface of a large-sized sheet assembly as described above. The user removes the printed assembly from the printer, and removes one or more sections of the pre-scored release liner. The user then adheres a first portion of the sheet to a substrate, such as a wall or window. The user continues to sequentially remove sections of the release liner and mount the sheet to the substrate in a section-by-section manner until the sheet is completely mounted to the substrate.

Further Alternatives

The foregoing has described particular embodiments of methods for designing and printing sheets, and sheets themselves. However, various modifications and changes may be made within the scope of the invention. For example, in a non-network based alternative embodiment of a system according to the present invention, software for designing and printing the wallpaper is provided on a storage medium readable by the local computer. A plurality of instructions may be stored on the storage medium and includes instructions for: (a) configuring the computer to display on the monitor a plurality of sheet-printing variables associated with the large-size assembly; (b) configuring the computer to enable the sheet-printing variables to be selected via the input device; (c) configuring the computer to receive information, via the input device, to be printed on the large-size assembly; and (d) configuring the computer and/or the printer to print the received information on the large-size sheet assembly in accordance with the selected large-size sheet printing variables.

Systems in accordance with the present invention may incorporate features from U.S. Patent Application Serial No. 09/684,055, which was filed October 6, 2000 and is entitled, "System and Method for Generating Customized and/or Personalized Documents." The same application has been published as a PCT application, International Publication Number WO 01/84299 A1. That application relates to an efficient method and system for generating customized and/or personalized printed materials, typically over a network having a client and a server.

For example, one embodiment of that system is an efficient method for generating and printing customized documents in a system having a client communicable with a network and a server communicable with the network. An interactive form is displayed on the client. User information is entered onto the interactive form, and is transmitted from the client to the server over the network. Default document parameters are obtained from a template file. Instructions to a page description file builder are formulated based upon the default document parameters and the user-defined information. A page description file is built based upon the instructions, and the page description file is transmitted to the client. The page description file is rendered for the first time at the client.

The method may also include various features and steps. The step of obtaining default document parameters from a template file may include parsing the template

file. The template files may be in the form of statements, such as Extensible Markup Language (XML) statements. The step of transmitting user-defined information comprises transmitting information in Hypertext Markup Language (HTML) code, with an option value format having a syntax comprising a token, a directive and a parameter. This structure may be referred to as "pseudo-XML" because it mimics XML functionality. Pseudo-XML is also extensible in that the set of parameters may be extended indefinitely, yet the pseudo-XML is backwardly compatible with HTML browsers.

The user information may typically include a variety of information, such as name, address, telephone number, facsimile number, e-mail address, billing and/or credit card information, text message, selection of a pre-defined graphic, and/or type of document to be generated. The user information may also include other information such as font type, font color, font size, location of text or graphics on the printed media, and/or location of graphics on the document.

The method may further include the step of printing the rendered page description file on a client-controlled printer, or on a remote printer such as a printer found at a commercial printing facility. A table of printer driver characteristics may be stored on the server. The table may be created by a single source, or may be built dynamically based on data provided by online users. Using information about the printer characteristics, the page description file is built to compensate for any tendency in the printer driver to print the ultimate page in a position on the page other than that desired. That is, the PDF file is built to compensate for any tendency of a particular printer driver to print the image at an offset to where the image should be on the page.

The page description file can be a Portable Document Format (PDF) file, a Postscript file or another format known in the art or developed in the future. The client may be a desktop computer, a Personal Digital Assistant (PDA), or another type of client that can interact with a server over a network, including a telephone that has a browser. The network can be an intranet or the Internet, or the means for connecting the client to the server can be a direct connection without the use of a network at all.

The step of formulating instructions can include formulating instructions in accordance with an application programming interface (API). A Java servlet or other computer program can be used to perform the step of formulating instructions. A Hypertext Markup Language (HTML) browser on the client can perform the step of transmitting the user-defined information from the client to the server, although as

browsers evolve it is expected that the browser may be compatible with Extensible Markup Language (XML), which is more versatile than HTML.

The default document templates may be generated with a Graphical User Interface (GUI), and stored on the server. A graphical visual representation of the template may be created with the GUI and then saved as an output data file. The templates may include default values for at least one of the following: font type, font color, font size, background color, location of text on the document, location of graphics on the document, size of the document, and/or shape of the document.

The method may also include the step of determining characteristics of a printer on which the printed media is to be printed. The page description file can then be built for compatibility with the particular printer. The quality and/or printed appearance of the printed graphic are thereby enhanced. For example, the page description file can be built to ensure that the document is printed at a particular page location consistently from printer to printer.

Considering now additional features that may be incorporated into the system, color management software may be employed. Color management software is known in the art, with Colorsync by Apple Computer Inc. and Pantone® by Pantone, Inc. being specific non-limiting examples. Color management software would allow the user to print out a sample at a workstation or on a personal printer and obtain a reasonable printed rendition of the intended color.

Tileable graphics may be employed, such that a small file containing a graphic or geometric figure, for example, may be placed tilewise to make up a much larger graphic. Tileable graphics are known in the art and are used in such commercial programs as Freehand by Macromedia Inc., Corel Draw by the Corel Corporation and Illustrator by Adobe Systems Inc., for example.

A sample "kit" may be provided having different substrates on which to print, color management software, and/or color swatches for the major home printer and computer platforms. The user would design the graphic, and then print out a small sample to see how it would look. The substrates would provide the texture, color, feel, etc. of the finished product. The user could even submit this sample with his or her order to denote his/her expectations of what the finished graphic would look like. This could be a miniature of the graphic or a segment of a tile.

Various other modifications may be made within the scope of the invention. For example, and considering again embodiments in which printed sheet media is the

end product (as, for example, wall covering media), the sheet media may be manufactured to have means for air egress, as described in published US patent application Nos. 742646 (filed Dec. 21, 2000), 742653 (filed Dec. 21, 2000), and 74654 (filed Dec. 21, 2000), all of which Avery Dennison Corporation owns and all of which relate to adhesive articles with improved air egress.

Consequently, the present invention is not limited to the specific examples presented herein. All of the patents, patent applications and publications cited in the foregoing are hereby incorporated by reference in their entirety.

CLAIMS

What is claimed is:

1. A method for designing and printing custom media comprising the steps of:
enabling a user access to a system for designing custom media;
presenting at least one media product option for selection by the user;
receiving the at least one wall media product option selected by the user; and
customizing the at least one media product option, wherein the step of customizing enables the user to input text and images.

2. The method of claim 1, further comprising the step of:
enabling the user to place an order for the at least one media product option.

3. The method of claim 2, further comprising the step of:
requesting payment information from the user.

4. The method of claim 3, further comprising the step of:
receiving the payment information.

5. The method of claim 2, further comprising the step of:
processing the order.

6. The method of claim 5, further comprising the step of:
printing the order.

7. The method of claim 6, further comprising the step of:
delivering the order.

8. The method of claim 1, further comprising the step of:
generating a sample image of the at least one media product option customized by the user.

9. The method of claim 8, wherein the sample image is a digital image.

10. The method of claim 1, wherein the step of customizing comprises enabling the user to perform at least one of the following customizations:

a) changing a size of the at least one media product option; and

b) changing at least one color of the at least one media.

11. The method of claim 1, further comprising the step of:

presenting custom criteria to the user.

12. The method of claim 11, wherein the step of presenting custom criteria to the user is based on the at least one media product option selected.

13. A system for designing custom wall covering comprising:

a user access module that enables access to a system for designing custom wall coverings;

a product option presenting module that presents at least one wall covering product option for selection by the user;

a receiving module that receives the at least one wall covering product option selected by the user; and

a customizing module that enables the user to customize the at least one wall covering product option, wherein the customizing module enables the user to input text and images.

14. The system of claim 13, further comprising an ordering module that enables the user to place an order for the at least one wall covering product option.

15. The system of claim 14, further comprising a payment information requesting module that request payment information from the user.

16. The system of claim 15, further comprising a payment information receiving module that receives the payment information.

17. The system of claim 14, further comprising an order processing module that processes the order.

18. The system of claim 17, further comprising a printing module that prints the order.

19. The system of claim 18, further comprising a delivering module that arranges delivery of the order.

20. The system of claim 13, further comprising a generating module that generates a sample image of the at least one wall covering product option customized by the user.

21. The system of claim 20, wherein the sample image is a digital image.

22. The system of claim 13, wherein the customizing module enables the user to perform at least one of the following customizations:

a) changing a size of the at least one wall covering product option; and

b) changing at least one color of the at least one wall covering.

23. The system of claim 13, further comprising a custom criteria presenting module that presents custom criteria to the user.

24. The system of claim 23, wherein the custom criteria presenting module presents the custom criteria to the user is based on the at least one wall covering product option selected.

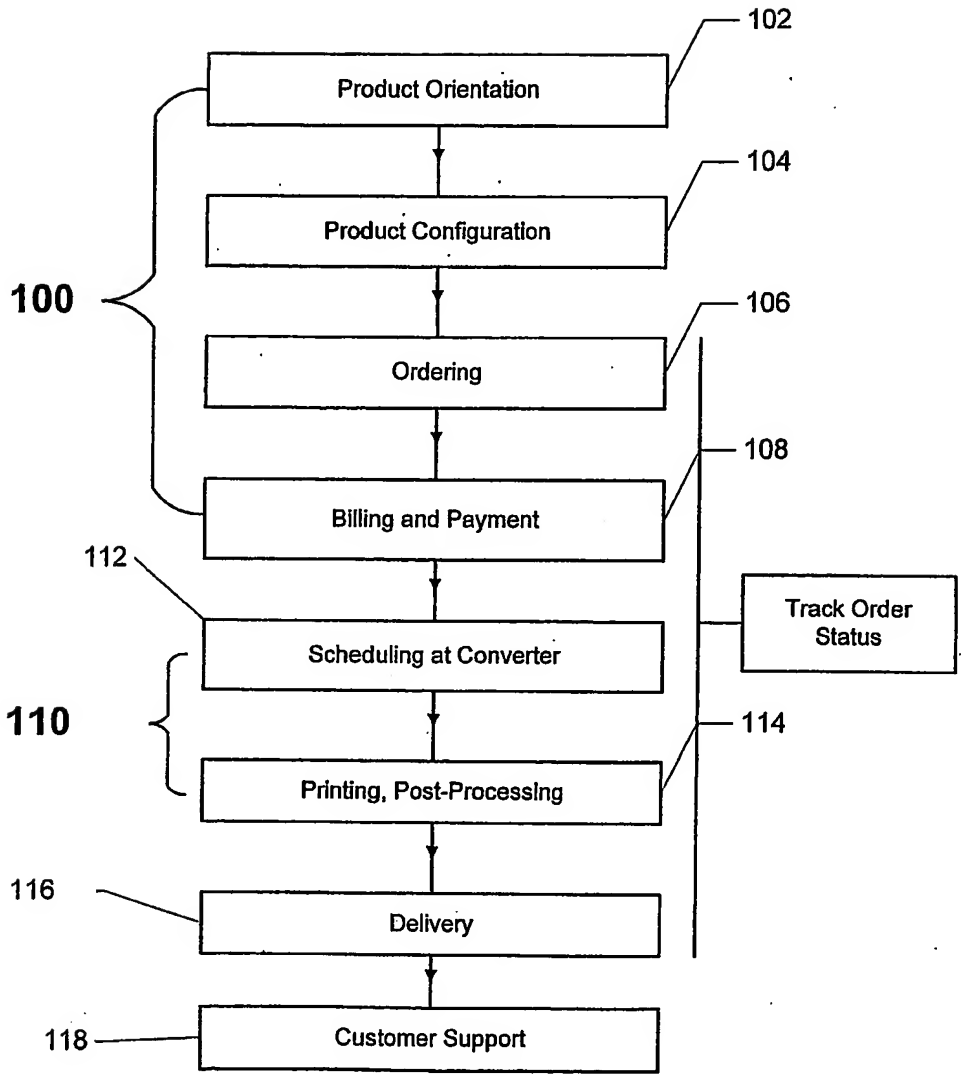

102
Product Orientation
104
Product Configuration
100
106
Ordering
108
Billing and Payment
112
Track Order Status
Scheduling at Converter
110
114
Printing, Post-Processing
116
Delivery
118
Customer Support

FIG. 1

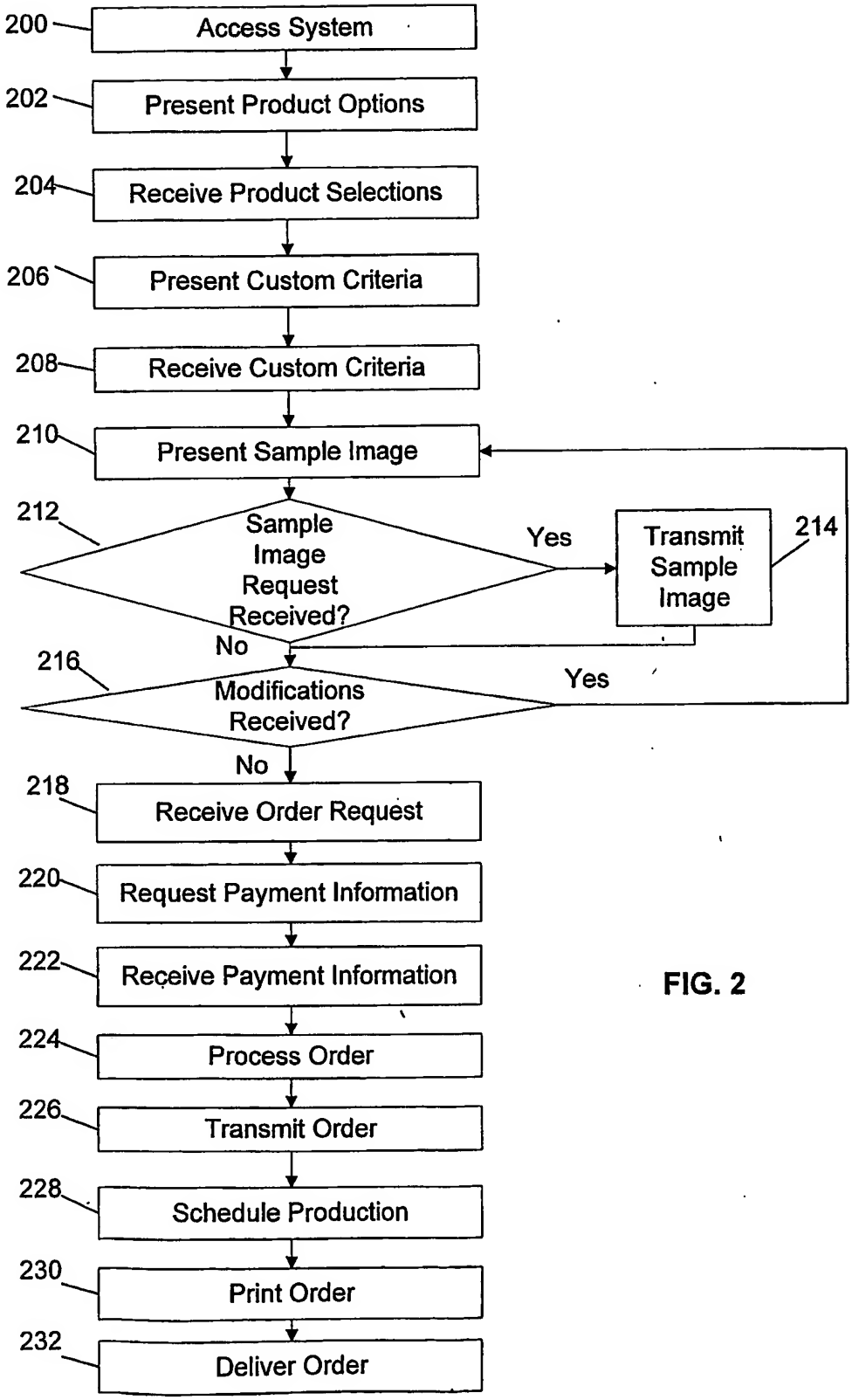

200
Access System
202
Present Product Options
204
Receive Product Selections
206
Present Custom Criteria
208
Receive Custom Criteria
210
Present Sample Image
212
Sample Image Request Received?
Yes
214
Transmit Sample Image
No
216
Modifications Received?
Yes
No
218
Receive Order Request
220
Request Payment Information
222
Receive Payment Information
224
Process Order
226
Transmit Order
228
Schedule Production
230
Print Order
232
Deliver Order

FIG. 2

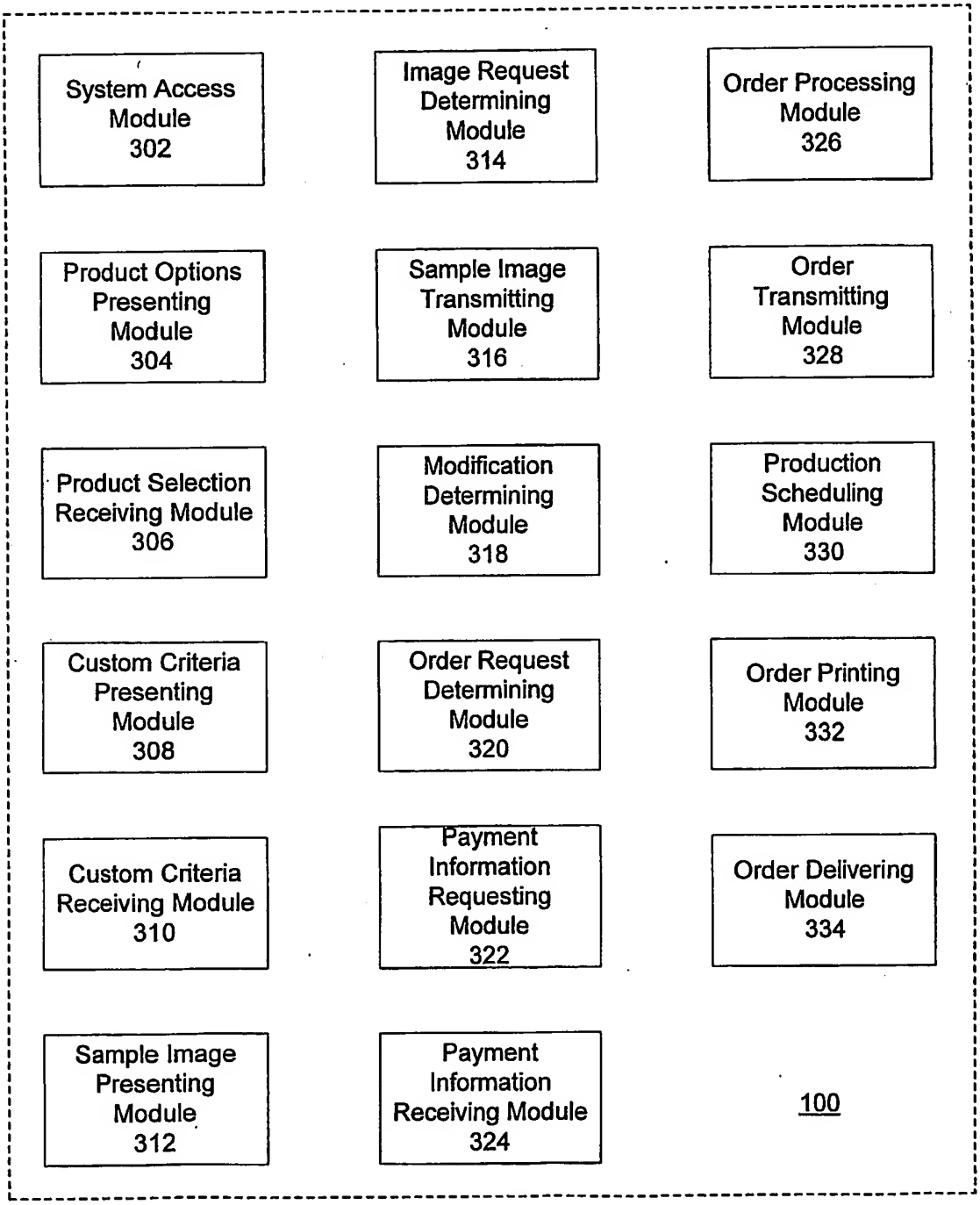

System Access Module 302
Image Request Determining Module 314
Order Processing Module 326
Product Options Presenting Module 304
Sample Image Transmitting Module 316
Order Transmitting Module 328
Product Selection Receiving Module 306
Modification Determining Module 318
Production Scheduling Module 330
Custom Criteria Presenting Module 308
Order Request Determining Module 320
Order Printing Module 332
Custom Criteria Receiving Module 310
Payment Information Requesting Module 322
Order Delivering Module 334
Sample Image Presenting Module 312
Payment Information Receiving Module 324
100

FIG. 3

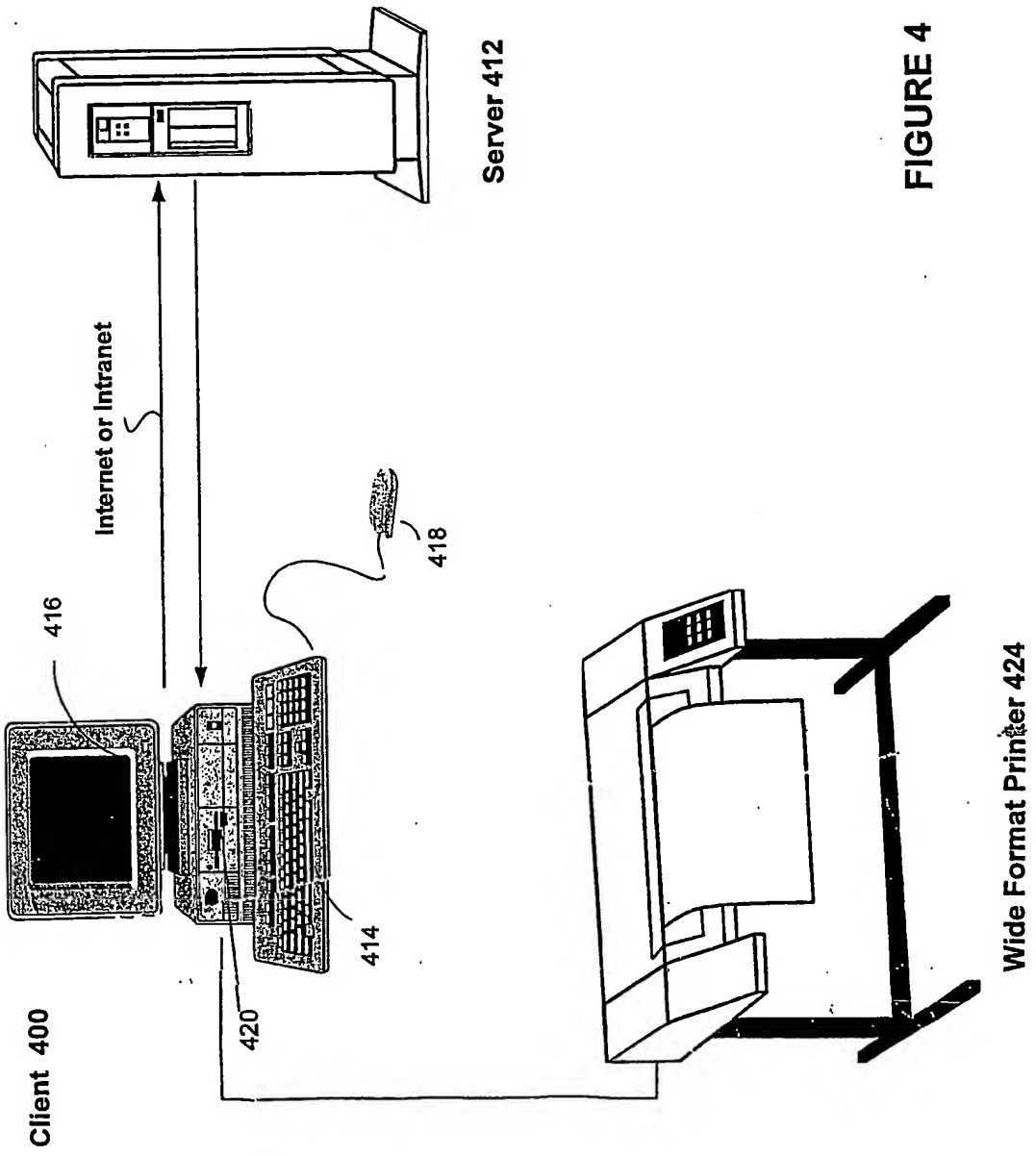
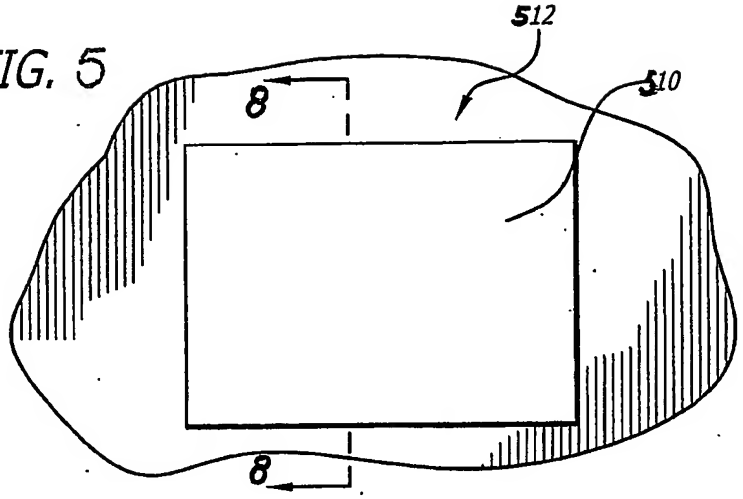

Server 412
Internet or Intranet
418
416
414
420
Client 400
Wide Format Printer 424

FIGURE 4

FIG. 5



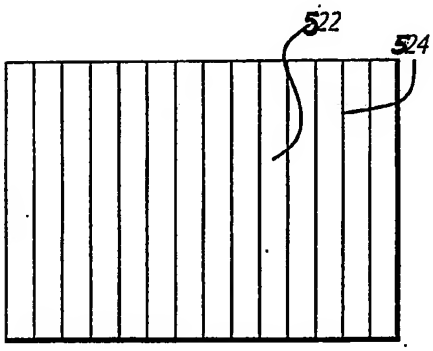


FIG. 6

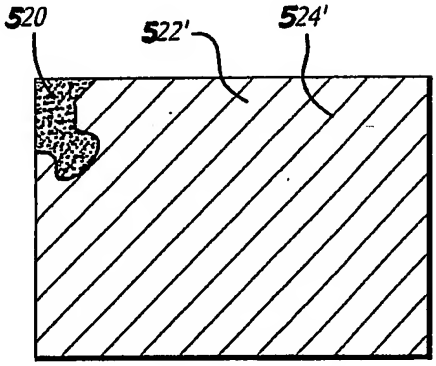


FIG. 7

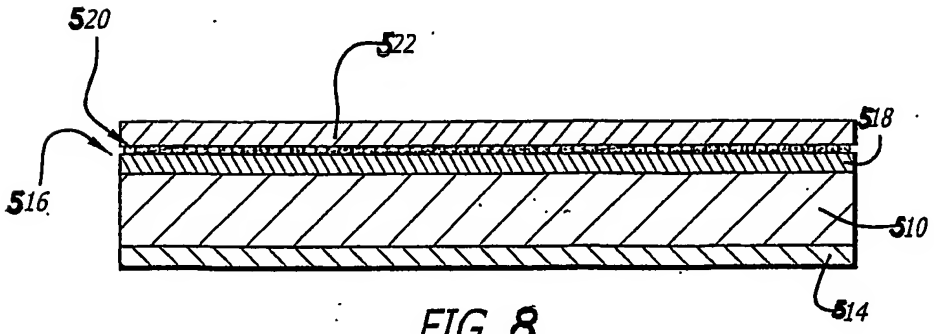


FIG. 8